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much — perhaps any thing — towards it; nor should they be expected to. It is a matter in which American naturalists surely should be proud and glad to aid. It is intended to bring it before the American Association in some form, next week, and I should be very glad to have a notice in *Science* regarding it.

D. S. MARTIN.

New York, Aug. 1.

Four Large South African Diamonds.

A MODEL of the Victoria, the Great White Diamond, or the Imperial as it has been more recently called, having been sent to this city lately, and nothing having been published in any scientific periodical concerning this stone, it occurred to the writer that some illustrations showing it in its natural, uncut form, as well as after cutting, might be of interest. Concerning its early history very little is known: in fact, where the stone was found is only a matter of conjecture, — a remarkable circumstance when we consider that this is the largest brilliant in the world.

An explanation by a letter in the *London Times* was given, as follows: "that this stone was not found in English dominions at all, but in the neighboring Orange Free State; that it had been found by a boor on his farm, who, knowing it to be a diamond, but fearing being turned out of his farm by a mob, kept the secret a whole year, until a Mr. Allenberg of Porth-Elizabeth saw it, and forwarded it to London."

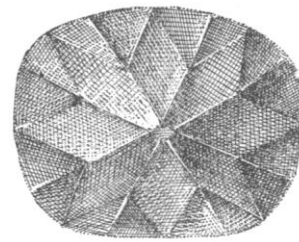
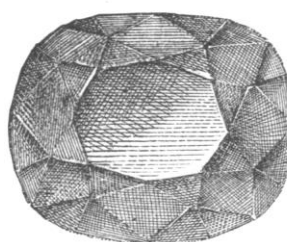
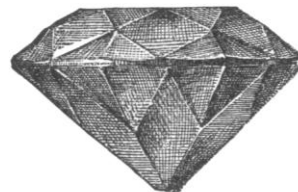
It is, however, believed that it was found by some one in one of the Kimberley mines, South Africa. The first intimation that any of the various mining companies had of its existence was when they heard of its safe arrival in London. It is generally supposed that in the month of June or July, 1884, the stone had been found by one of the surveillance officers of the Central Mining Company in the Kimberley mines. It being his duty to search others, he had the privilege of not being searched himself, and so the stone was passed through the searching-house, and he was afterwards supposed to have found means of communicating with four illicit diamond-buyers. Owing to the stringency of the diamond laws of Griqualand-West, the trading in rough diamonds is forbidden any one not owning one of the 'patents' or 'licenses,' as they are called, costing £200 and a guaranty of £500. All purchases made by them must also be entered in a special registry, and are duly signed every week by the police authorities. £3,000 was the price paid to obtain the stone from the first possessor. To prepare themselves for the ordeal of transporting the stone out of the district, they assembled at night, commenced drinking, then gambling, and after a night's debauch two of the party lost their share in the big stone. The other two reached Cape Town in safety, where the diamond laws are not in force, and from a dealer there received £19,000 cash for their stone. An outward duty of one-half per cent is collected on all shipments of diamonds from Cape Colony; but this diamond is said to have been carried by one of the passengers of a mail steamer, and was hence undeclared. We next hear from it in London, causing considerable sensation at Hatton Garden, the great diamond-market. After considerable time had been spent in trying to find a capitalist who could afford to buy such a gem, it was at last arranged by a former resident of the Cape mines to form a company of eight persons, who bought the stone together for £45,000 cash, on condition that if they should dispose of it each should receive a ninth share in the eventual profits.

Before cutting, it was estimated that the crystal would furnish either of the following gems; if cut as a briallette, 300 carats; as a drop, 230 to 240 carats; as a lozenge, 250 carats; and as a mathematically perfect brilliant, 150 carats. If cut in the latter form, it would have furnished cleavages that would cut into one 40-carat, one 20-carat stone, and 40 carats of smaller stones. It was finally decided to cut it into the largest possible brilliant, still preserving a good shape, and Amsterdam was selected as the place where the gem could best be cut.

It was accordingly sent to the polishing-mills of Jacques Metz, who erected a special workshop for the purpose. In order to better obtain the brilliant form of cutting, a piece was cleaved off which furnished a 19-carat diamond, and was sold to the King of Portugal for £4,000. The cutting of the large stone, which was commenced on the 9th of April, in the presence of the Queen of Hol-

land, took about twelve months, since, instead of being cut by abrasion with another diamond, as diamonds are usually cut, it was polished down on the scaif; and a great amount of time was consumed by the cooling of the stone, as it heated after an hour's running on the wheel. The cutter of the stone was M. B. Barends. The stone in its finished condition weighs 180 carats, and is a beautiful, perfect, steel-blue diamond, and is the largest brilliant in the world.

It is 39.5 mm. ($1\frac{5}{8}$ inches) long, 30 mm. ($1\frac{1}{4}$ inches) wide, and 23 mm. ($\frac{1}{2}$ of an inch) thick, being exceeded in size by one diamond only, the Orloff, belonging to the Russian crown, which weighs 194



FIGS. 1, 2, 3.

carats, but is a large deep rose, and not a brilliant. The Victoria exceeds the Regent in weight by $44\frac{1}{2}$ carats. The Kohinoor weighs only $106\frac{1}{8}$ carats.

The three figures (Figs. 1, 2, 3) give the front, back, and side features of the stone. It will be observed that the form is not entirely even, and that on one side of the girdle there is quite a flat place, a natural unpolished surface, necessary, in cutting, to preserve the large weight of the stone. It is, however, a perfect 58-facet brilliant.

The original weight of the stone was $457\frac{1}{2}$ carats, $3\frac{1}{10}$ ounces



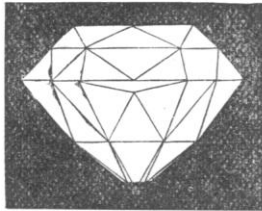
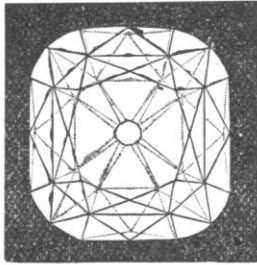
FIG. 4.

Troy. The figure (Fig. 4) is drawn from two photos, that, strange to say, had been taken by a Cape photographer, and fortunately passed through my hands; and the stone to-day is held by a London syndicate for £200,000.

The Tiffany Company large yellow diamond (Figs. 5, 6, 7) weighs 125 $\frac{3}{8}$ carats, is absolutely perfect, is a 'double-deck' cut brilliant, as it is termed, and is undoubtedly the finest large yellow diamond known. It was found in the Kimberley mine about nine years ago, and was cut in Paris. One of the most pleasing features is that it not only retains its rich yellow color by artificial light, but is even more beautiful than by day. It has 40 facets on the crown, 44

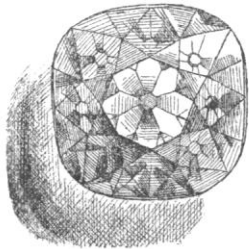
facets on the pavilion or lower side of the stone, and 17 facets on the girdle: total number, 101. Because of its deep color, this is a finer stone than the historical Star of the South (125 carats), which was purchased by the Mahratta, ruler of Baroda, for \$400,000, at the French Exposition, 1867. It also rivals the Florentine, which, according to Schrauf's determination (*Sitzb. d. k. Akad. d. Wissensch.*, Band 54, Abtheil. i. Nov., 1866), weighed 133 $\frac{3}{8}$ carats, and was sold for 2,000,000 florins, but is only a long double rose or drop, and not a brilliant.

The Tiffany Company No. 2 (see Figs. 8, 9) weighs 77 carats, is

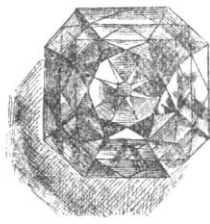


FIGS. 5, 6, 7.

of a light-yellowish color, is absolutely perfect, and is one of the few large stones that have been cut for beauty and not for weight. It is so evenly cut that it will stand on the culet, which is only of the regular size. This stone was exposed to a strong blazing sunlight for thirty minutes, two thermometers registering 110° to 120° F. during the whole time of exposure; and only a very faint, if any, phosphorescence was observed, although the stone was placed in a dark room within thirty seconds after exposure. It had been laid on a black velvet case during the whole time of the experiment,



FIGS. 8, 9.



FIGS. 10, 11.

and nothing came in contact with it while it was being carried to a place of darkness. Its specific gravity is 3.523+ at 60° F.; it measures 26 mm. (1 $\frac{1}{2}$ inches) in length, 25 mm. (1 inch) in width, and 17 mm. ($\frac{2}{3}$ of an inch) in thickness; there are 33 facets on the crown or upper side of the stone, and 25 facets on the pavilion or back; and, in addition, there are 55 small facets evenly distributed around the girdle.

Figs. 10 and 11 show a fine yellow diamond, weighing 51 $\frac{1}{2}$ carats, also from South Africa, and recently recut by Tiffany & Co. in New York City. It is absolutely perfect, and without flaws. It meas-

ures 22 mm. ($\frac{7}{8}$ of an inch) in length, 22 mm. in width, 23.75 mm. ($\frac{3}{4}$ of an inch) at the corners, and 15.75 mm. ($\frac{5}{8}$ of an inch) in thickness; there are 73 facets on the crown or upper side of the stone, and 49 facets on the pavilion or back; and the cutting, which is that of a double-deck brilliant with some of the lower crown-facets divided in two, is quite unique, forming a remarkably beautiful gem.

GEORGE F. KUNZ.

New York, Aug. 1.

Pars Propatagialis musculi cucullaris.

IN a previous number of *Science* (ix. p. 623) Dr. Shufeldt publishes an account of his discovery of "another muscle in birds of taxonomic value,"—a muscle which he thinks unnamed, proposing for it the name '*dermo-tensor patagii*,' and of which he says that "Garrod, even if he knew of its existence, certainly overlooked" it.

This muscle is by no means a new discovery, nor is it in want of names. In the first place, it is Fürbringer's and Gadow's "*pars propatagialis m. cucullaris*." Slightly modified, it is Viallane's "*temporo-alaris*." Gervais and Alix are said to have called this muscle "*tenseur de la membrane axillaire*," and other names might also be quoted. That this muscle has not been "pressed into service with telling effect in taxonomy of the class" is simply due to the fact that Dr. Shufeldt's predecessors found that it did not have the taxonomic value which he seems to attribute to it. He seems to suppose that it is peculiar to the "true passerine birds," by which term I suppose he means the "*Oscines*," since he excludes *Tyrannus* and the "typical *Passeres mesomyodi*."¹ This is not the case, however, as the appended two figures demonstrate, which show that it is typically developed in at least some woodpeckers and parrots.

Dr. Shufeldt, in the paper alluded to, does Garrod great injustice. As I have already pointed out, the muscle is a well-known one, and it is quite unwarrantable to suppose for one moment that Garrod was ignorant of its existence ("even if he knew its existence"). When Garrod wrote his paper on the wing-muscles of birds, he had dissected about one hundred and fifty species of the most different groups of *Passeres* and picarians; and even if he was ignorant of the literature, which of course he was not, he could not possibly have overlooked so conspicuous a muscle. But the fact is, that in the paper in question he treats almost exclusively of the *tensor patagii brevis*, and *t. patagii longus* is only mentioned by the way. The muscular slip which inserts itself on the latter is therefore not at all mentioned, but that does not justify the conclusion that it was overlooked. On the contrary, in the numerous figures which accompany Garrod's paper, it is plainly shown in the only "true passerine bird" (oscinine) figured by him; viz., *Icterus*. And here Dr. Shufeldt grossly misrepresents Garrod. He says, "Garrod chose the wing of *Ramphastos cuvieri* to illustrate the arrangement of the patagial muscles in the *Passeres*, but not a hint of this one is given" (Italics mine).² Of course, Garrod did nothing of the kind: he was too good an ornithologist to believe that *Ramphastos* is one of the *Passeres*. And in point of fact, Garrod expressly states that he presents the figure as representative of a typical picarian bird. That in this case "not a hint" of this muscle is given, should, then, no longer surprise Dr. Shufeldt.

The muscle in question is quite variable, but its true nature as a slip of the deeper portion of *m. cucullaris* (*panniculus carnosus*) may be plainly seen when dissecting such a bird as the English sparrow (*Passer domesticus*). In the free margin of the *parapatagium*, as I call the duplicature of the skin between the neck and the shoulder, which is only a continuation of the *propatagium*, you find a well-developed muscle, which, by means of a tendon at its distal end, inserts itself on the *tensor propatagii longus* at about the middle of the latter. The portion of *m. cucullaris* from which this slip is given off, in its upper extremity corresponds closely with Viallane's *temporo-alaris*, it being easily separated from the skin, and inserts itself on the head above the temporal muscle, while in its entire length it is separated from the dorso-medial line by a considerable space.

¹ See also where he speaks of the "passerine affinities" of *Ampelis* in contradistinction to the "clamatorial ones."

² That this is not a *Japsus calami* is evident both from the line italicized, and from the fact that in the explanation of Fig. 1 *Ramphastos cuvieri* is again referred to as "a passerine bird."